

CX20952 Low-Power High Definition Audio CODEC AudioSmart™ Product Brief



Stereo AudioSmart Class D, Two Capless Headphones, Headset, Universal Jack, Subwoofer with EQ, Re-Tasking, Hardware EQ/DRC, Four Digital Microphones, and I²C

Product Overview

Conexant's CX20952 is a low-power, 102dB SNR, HD audio CODEC that is aimed at delivering high-quality audio for notebooks, ultrabooks, and tablets. With two 24-bit stereo DACs operating at sampling frequencies up to 192kHz and two 24-bit stereo ADCs operating at sampling frequencies up to 96kHz, the CODEC can support multi-streaming and real-time communications applications. Combining these hardware features with Conexant's voice and speech input pre-processing algorithms, the CODEC is the ideal solution for platforms that need ASR, Lync/Skype certification, and optimal performance in noisy environments.

Part of Conexant's AudioSmart™ family, the new CX20952 is an intelligent, single-chip solution that manages signal dynamics and monitors power delivered to speakers, ensuring maximum SPL and optimal performance without damage to system components.

The CODEC has an integrated stereo filterless class D amplifier with a programmable HPF and patented common mode scrambling technology that is capable of driving 2Wrms per channel at 1% THD+n into 4W loads; 2.8Wrms at higher distortion. Devices and speakers have industry-leading, load-based protection that includes power averaging, DC detection, short-circuit, near-short, and over-temperature. Built-in five-band hardware EQ and DRC engines optimize speaker loudness without distortion, and enable a high-quality audio experience that is independent of the driver and operating system.

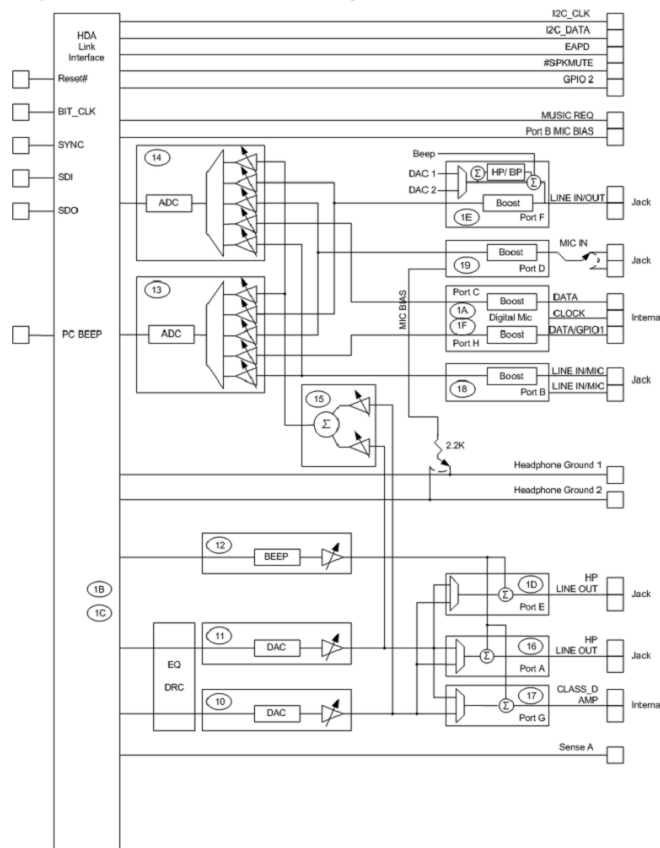
Two ProCoustic capless headphone drivers produce a full-range frequency response for headphones and line-out devices. Fully integrated headset support includes auto-detect and auto-switch between Apple and Nokia style headsets. In-line command sensing enables control of third-party applications directly from the headset. A single universal jack supports all headsets, headphones, speakers, microphones, and line-in devices. A line in/out re-tasking port is available that can be used for dock interfaces, high-powered speaker amplifiers, and multi-speaker systems. The mono subwoofer output includes a two-band programmable low-pass or band-pass filter. D3Live allows external audio devices to play to the speakers with EQ/DRC while the system is asleep.

Up to four digital microphones can be connected with programmable clock and DC offset removal. This supports all clamshell, convertible, detachable, and tablet microphone arrangements that includes all user-facing and world-facing configurations. An I²C master controller interface allows control of external devices, such as amplifiers in real-time by the audio driver.

Conexant's PopShield eliminates pops and clicks during all transition states, including active DC offset removal and an innovative Vref ramping. D-Flex power management ensures the longest battery life. Analog and digital BEEP is supported, as well as multiple GPIOs, EAPD, and speaker mute.

Conexant offers comprehensive software support with in-house and third-party APOs, including Andrea Electronics, Creative Labs, Dolby, DTS, Waves, and Intel ASR.

System Block Diagram



Key Features

Two stereo DACs and ADCs:

- DACs = 24 bits, 192kHz sample rate, and 102dB SNR
- ADCs = 24 bits, 96kHz sample rate, and 95dB SNR
- 2.8Wrms per channel class-D stereo speaker amplifier
- Five-band EQ and DRC per DAC channel
- Load-based speaker protection includes DC, short, near-short, temperature, and power averaging
- Two ProCoustic capless stereo headphones
- Integrated headset with OMTP/CTIA auto-detect and switch, as well as in-line command sensing
- Universal jack supports all headsets, headphones, powered speakers, microphones, and line-in devices
- Line-in for external devices and docks re-task to mono subwoofer output with a programmable two-band EQ
- Input/output re-tasking enables multi-function jacks and external speaker amplifiers
- Digital microphone interface with boost and DC offset removal supports up to four microphones
- One I²C master interface
- Digital mixer allows users to record what is playing
- D3Live allows external audio devices to play to the internal speakers with EQ/DR while the system is asleep
- Record security prevents unwanted recordings from all/any input port/ports
- GS mark headphone limiter
- Jack sensing
- Analog and digital PC BEEP
- Multiple GPIOs, EAPD, and speaker mute
- Integrated 5V/3.3V LDOs ensure maximum performance
- 6 x 6 QFN; 0 to 70°C

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